Attachment Q: Discharges of Domestic Sewage through Land Treatment Non-point Source Discharge Systems, Including Septic Tank Leachfield Systems

Introduction

Land Treatment Non-point Source System means a system which consists of primary, secondary, and tertiary treatment followed by a structure or device to apply effluent to the soil either above grade or below grade which will then discharge to the ground water of the state. Land Treatment Non-point Source Systems include septic/leachfield systems.

In general, wastewaters treated by Land Treatment Non-point Source Systems include domestic sewage wastewater that is primarily of animal, plant, or natural origin and amenable to treatment by soil based systems.

Please note that DEP has delegated the authority to issue permits for household and small commercial subsurface disposal systems to the Commissioner of Public Health and Addiction Services. In general, such systems involve the discharge of less than 5,000 gallons per day (gpd) of domestic sewage to any one lot. See Section 22a-430-1 of the Regulations of Connecticut State Agencies (RCSA) for further information.

Any engineering firm or other interested party planning a project requiring a DEP permit for discharges from a Land Treatment Non-point Source System is strongly encouraged to contact the Subsurface Sewage Disposal Section of the Water Management Bureau at 860-424-3018 to arrange a pre-application meeting to discuss the criteria necessary for evaluating these systems.

In evaluating applications for discharges from Land Treatment Non-point Source Systems, DEP asks: "Will the discharge cause pollution?," and "Will the treatment system adequately protect the waters of the state from pollution?". Responses to these questions are reviewed in accordance with DEP's technical methodology and Connecticut's ground water quality standards which are referenced in "Seepage and Pollutant Renovation Analysis For Land Treatment, Sewage Disposal Systems" (DEP Bulletin No. 7) and the "Connecticut Water Quality Standards". Both of these documents are available from DEP Maps and Publications (860-424-3555). In addition, most Land Treatment Non-point Source Systems must be reviewed by the local director of health in compliance with the relevant provisions of the public health code.

The following are three basic criteria that DEP evaluates involving basically invariable site characteristics:

1. System size: System size is controlled by the ability of septic tank effluent to penetrate the biological crust growth, which matures and stabilizes at the soil interface in a leaching system. The applicant must demonstrate that he or she has sufficient suitable land area to install the size of leaching system mandated by the long term acceptance rate of sewage and the requirements of the public health code.

2. The site must have sufficient capacity in the soil and groundwater system to transmit the effluent for an adequate distance without surfacing or breakout. This must be demonstrated by the performance of a detailed seepage analysis utilizing permeability values, flow nets or calculated gradients, and appropriate 2 or 3 dimensional analysis.

3. Connecticut's ground water quality standards require that the discharger control the zone of influence of the discharge. The zone of influence is the surface land area below which the ground water is degraded to a poorer quality than drinking water by reason of the discharge. DEP has developed a method of analysis for the absorption, dilution, or die-off of normal pollutants in the soil system. The details of this analysis will vary with different flows and sites and should be discussed with DEP for each application.

Pre-application Procedures

In order to expedite permit applications, the following standard procedures are strongly recommended:

Site testing should take place with a DEP representative present, *prior* to submitting an application package to DEP. This site testing may discourage further activity at the site if the criteria specified above may not be met, thereby saving time and effort that would have been spent on the application process. Please try to schedule site testing with DEP 2-3 weeks in advance. The local and state health departments should also be notified of any site testing.

Site testing must include deep test pits, percolation tests, and determinations of permeability. Test pits and perc tests should conform to good engineering practice and the relevant provisions of the public health code. Permeability evaluations should conform to good engineering practice and the methods outlined by DEP Bulletin No. 7 concerning this subject. It is desirable that the K value be determined by three methods of testing and estimations.

Attachment Q

The application package should be prepared only after site testing is performed. For applications for new discharges from Land Treatment Non-point Source Systems include the following supporting documents as Attachment Q (See page 3 of this attachment for instructions on applications for renewals of existing permits):

1. An engineering report describing the proposed Land Treatment Non-point Source System in a clear format, and include the following minimum information:

    a. Sewage flows, loads and their derivation. Flow and load derivation can come from analytical tests, guidelines, meter readings, regulatory standards, or from documented engineering experience. Analytical tests should include, at a minimum, the following substances: BOD, Total Oil and Grease, Total Suspended Solids, Ammonia as Nitrogen, Nitrate, Nitrite, Total Kjeldahl Nitrogen, pH, and Phosphorus. If the building served has potential as a manufacturing or other facility which could generate non-domestic sewage flows, then the report must deal with the handling of such wastes. Analytical data, which is required to be submitted, shall be based on reasonable projections, derived from similar operations or from scientific calculations. A confirmatory analysis may be required after the permit to discharge is issued.

    b. A complete log of all soil tests attempted and completed.

    c. A seepage analysis to demonstrate hydraulic capacity.

    d. An analysis of the removal, absorption, die-off, or dilution of pollutants of concern, normally including virus, bacteria, nitrate nitrogen, and phosphates.

    e. A summary discussion of the design basis of the proposed system, including a proposed program to monitor the disposal system, the discharge or the effects of the discharge on the waters of the state and a description of any proposed controls intended to ensure the proper operation and maintenance of the system.

2. A plan of the proposed system. This plan should be of reasonable scale for review and analysis, preferably 1: 20 or 1: 40 for areas of concern. Plans should conform to standards of good draftsmanship, be readable, and free of excessive detail which make analysis and interpretation difficult, and include the following:

    a. Property and easement lines; location of adjacent wells, existing and proposed on-site water supply wells, existing and proposed monitoring wells; water supply lines; watercourses; subsurface pipes; wetlands; or other area of environmental concern.

    b. Contours, existing and proposed; for most projects a 2' interval is preferred.

    c. Layout of building.
    d. Collection and treatment/pumping system where appropriate.

    e. Preliminary leaching system layout, including elevations and distribution.

f. Location of all soil tests.

g. Delineation of the zone of influence for the most restrictive pollutant determined from analysis.

h. Other information that the applicant feels will clarify their analysis, such as hydrogeologic boundaries.

For applications to renew an existing permit to discharge from Land Treatment Non-point Source Systems, submit the following supporting documents as Attachment Q:

1. An engineering report that evaluates the performance and operation of the subsurface sewage treatment and disposal system as designed, approved and permitted.

2. A summary and review of Discharge Monitoring Reports (DMR's) for the discharge; water meter readings; and monitoring and maintenance requirements.

3. A list of changes, if any, in circumstances or information on which the previous permit was based.

Upon receipt of your application, DEP staff will contact you to schedule a field visit for physical inspection of the disposal system; starting at the head of the system, (e.g., septic tank(s)), and working through to the discharge points, (e.g., leaching field); and including inspection of baffles, pumps, distribution boxes, monitoring ports, and pretreatment systems.

If main distribution boxes and/or leaching fields are not accessible, (e.g., under pavement) you must inspect conditions (e.g., condition of baffles, amount of sludge in D-box) to determine if excavation is warranted.